

REMARKS

Claims 1 through 3, 6 through 20, 23 through 31, 34 through 37 and 39 through 41 are currently pending in the application.

Claims 4, 5, 21, 22, 32, and 33 have been canceled in this amendment.

Objection under 37 C.F.R. 1.75(c), Improper Dependent Form

Claims 4, 5, 21, 22, 32 and 33 were objected to under 37 C.F.R. § 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim. Please cancel claims 4, 5, 21, 22, 32, and 33 without prejudice or disclaimer.

35 U.S.C. § 112, 1st Paragraph

Claims 4, 5, 21, 22, 32, and 33 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 4, 5, 21, 22, 32 and 33 have been cancelled. Applicants respectfully request withdrawal of the above rejection.

35 U.S.C. § 102 Rejections

Previously, claims 1 through 5, 16, 18 through 24, 27, 29 through 33, 37 and 41 were rejected under 35 U.S.C. § 102(b) as being anticipated by Ochiai et al. (U.S. Patent 5,643,831). Applicants respectfully traverse this rejection as hereinafter set forth.

Applicant submits that a claim is anticipated only if each and every element as set forth in the claim is found either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Ochiai describes a method for fabricating solder bumps. The method comprises the steps of: preparing a plate having a flat surface, a crystallographic plane, and another crystallographic plane. The flat surface is in the crystallographic plane. (Col. 2, lines 63-67). A plurality of cavities is formed on the flat surface of the plate. These cavities are in the shape of a parallelogram, which is arranged such that one side of the parallelogram is generally parallel to the second crystallographic plane. The cavities are filled with solder paste and the plate is then arranged in an inclined position and heated to form solder balls in the cavities. After forming, the solder balls are transferred from the plate to a first member onto which the solder bumps are to be formed. (Col. 3, lines 1-8).

By way of contrast to Ochiai, independent claims 1, 18, and 29 of the present invention each recite elements of the claimed invention comprising a mold apparatus for forming at least one metal bump for placement on a secondary substrate. The mold has "at least one cavity formed in said surface of said substrate, said cavity having substantially the same dimensions as the at least one metal bump, said at least one cavity having a shape of one of a trapezoidal shape, a hemispherical shape, rectangular shape, and a square shape". Metal solder paste may be applied to the mold, then slightly melted to transfer the metal bumps to a carrier substrate. The metal bumps thus maintain substantially the same dimensions as the cavity of the mold apparatus when transferred. Ochiai does not describe that the cavity is substantially the same dimension as the solder ball to be formed and said at least one cavity having a shape of one of a trapezoidal shape, a hemispherical shape, rectangular shape, and a square shape. The solder balls formed according to the method described in Ochiaia project above the surface of the forming cavity and cannot have the claimed element of the invention calling for ". . . said cavity having substantially the same dimensions as the at least one metal bump and said at least one cavity having a shape of one of a trapezoidal shape, a hemispherical shape, rectangular shape, and a square shape" as the metal bump described in Ochiaia is significantly bigger than the forming cavity and the cavity shape has cavity shapes different than those set forth in the presently claimed invention of amended independent claims 1, 18, and 29.. (See FIGS. 3, 14A, 14B, 14C.).

As Ochiai fails to expressly or inherently identically describe each and every element of the claimed invention in presently amended independent claims 1, 18, and 29, Applicants submit that claims 1, 18, and 29 are not and cannot be anticipated by Ochiai under 35 U.S.C. § 102.

Claims 2, 3, 16, 19, 20, 23, 24, 27, 30, 31, 37, and 41 are each allowable as depending either directly or indirectly from allowable claims 1, 18, and 29.

35 U.S.C. § 103 Rejections

Rejection Based on U.S. Patent 6,025,258 to Ochiai et al.

Claims 6 through 11, 17, 25, 26, 28, and 34 through 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ochiai et al. (U.S. Patent 5,643,831).

Applicant submits that M.P.E.P. § 706.2(j) sets forth the standard for a § 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Claims 6 through 11 and 17 are each allowable, among other reasons as depending from allowable claim 1 of the present invention. Claims 25, 26, and 28 are also each allowable as depending from allowable claim 18 of the present invention. Claims 34 through 36 are each allowable as depending from allowable claim 29.

Rejection Based On U.S. Patent 5,643,831 to Ochiai et al. in view of U.S. Patent 2,979,773 to Bolstad

Claims 12 through 15, 39 and 40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ochiai et al. (U.S. Patent 5,643,831) in view of Bolstad (U.S. Patent 2,979,773).

Claims 12 through 15 are each allowable, among other reasons, as depending from allowable independent claim 1. Claims 39 and 40 are each allowable, among other reasons, as depending from allowable independent claim 29.

CONCLUSION

Claims 1 through 3, 6 through 20, 23 through 31, 34 through 37 and 39 through 41 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Applicants request the allowance of such claims and the case passed for issue. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



James R. Duzan
Attorney for Applicant
Registration No. 28,393
TRASKBRITT, PC
P.O. Box 2550
Salt Lake City, Utah 84110
(801) 532-1922

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